

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A spindle motor for use in hard disk drives comprising:
a shaft, said shaft comprising a gradually expanding lower portion;
a bearing sleeve surrounding said shaft such that a bearing gap is formed between said shaft and said bearing sleeve; and
a plurality of asymmetric pressure generated grooves being formed on one of an outer surface of said shaft and an inner surface of said bearing sleeve, said asymmetric pressure generating grooves generating an excess pressure displacing a volume of lubricating fluid, wherein said gradually expanding lower portion expands toward an end face of said shaft, and wherein said gradually expanding lower portion of said shaft is provided with at least one fluid channel, said fluid channel ~~comprising a large diameter~~ being configured to accommodate and pass through said volume of lubricating fluid displaced due to said excess pressure.
2. (Original) The spindle motor according to Claim 1, wherein said bearing sleeve further comprises an inner surface complementing shape of said gradually expanding lower portion of said shaft, and wherein an asymmetrical groove pattern is provided on one of an outer surface of said gradually expanding lower portion of said shaft and said complementary shaped inner surface of said bearing sleeve.
3. (Original) The spindle motor according to Claim 2, wherein the asymmetrical grooved pattern is sinusoid-shaped.
4. (Original) The spindle motor according to Claim 2, wherein the asymmetrical grooved pattern is spiral-shaped.

5. (Original) The spindle motor according to Claim 2, wherein the asymmetrical grooved pattern is herringbone-shaped.

6. (Original) The spindle motor according to Claim 2, wherein the asymmetrical grooved pattern is formed as a part of a hydrodynamic radial bearing.

7. (Original) The spindle motor according to Claim 2, wherein the asymmetrical grooved pattern is formed as a part of a hydrodynamic axial bearing.

8. (Currently Amended) The spindle motor according to Claim 1 further comprising a counter-plate enclosing said bearing sleeve, wherein an end face of said gradually expanding lower portion of the shaft faces the counter-plate.

9. (Original) The spindle motor according to Claim 1, wherein said gradually expanding lower portion of the shaft comprises a double conical extension.

10. (Original) The spindle motor according to Claim 1, wherein said gradually expanding lower portion of the shaft is pear shaped.

11. (Original) The spindle motor according to Claim 1, wherein said gradually expanding lower portion of the shaft is half spherical shaped.

12. (Original) The spindle motor according to Claim 1, wherein said gradually expanding lower portion of the shaft is spherical shaped.

13. (Original) The spindle motor according to Claim 1, wherein said gradually expanding lower portion of the shaft is a separate component attached to the shaft and being aligned to an end face of the shaft.

14. (Currently Amended) The spindle motor according to Claim 8, wherein a grooved pattern is formed on the surface of said counter-plate.

15-20. Cancelled